

DRAFT
ENGINEERING EVALUATION
THE HOME DEPOT #6964
PLANT NO. 17033
APPLICATION NO. 012728

BACKGROUND

THE HOME DEPOT #6964 is applying for an Authority to Construct and/or Permit to Operate for the following equipment:

S-1 Emergency Standby Generator Set: Diesel Engine; Make: John Deere; Model: 6068HF275L; Rated Horsepower: 220 HP

The standby generator will be used at 5401 East Thorton Ave. Newark, CA 94560.

EMISSIONS SUMMARY

Annual Emissions:

The 220 HP diesel engine at S-1 is CARB Certified and the emission factors are listed below.

Component	Emission (g/bhp·hr)
NO _x	4.18
CO	0.447
POC	0.220
PM ₁₀	0.134
SO ₂ *	0.184

**The emission factor for SO₂ is from Chapter 3, Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors.*

SO₂ 8.09E-3 (% S in fuel oil) lb/hp-hr = 8.09E-3 (0.05% S) (454 g/lb) = 0.184 g/hp-hr

		g/hp-hr	hp	hr/yr	lb/g		lb/yr		TPY
NO _x	=	4.18	220	50	0.0022026	=	101.2755	=	0.0506378
CO	=	0.447	220	50	0.0022026	=	10.83018	=	0.0054151
POC	=	0.22	220	50	0.0022026	=	5.330292	=	0.0026651
PM ₁₀	=	0.134	220	50	0.0022026	=	3.246632	=	0.0016233
SO ₂	=	0.184	220	50	0.0022026	=	4.458062	=	0.002229

Maximum Daily Emissions:

A full 24-hour day will be assumed since no daily limits are imposed on intermittent and unexpected operations.

POLLUTANT		g/hp-hr	hp	hr/day	lb/g		lb/day
NO _x	=	4.18	220	24	0.0022026	=	48.61226
CO	=	0.447	220	24	0.0022026	=	5.198488
POC	=	0.22	220	24	0.0022026	=	2.55854
PM ₁₀	=	0.134	220	24	0.0022026	=	1.558384
SO ₂	=	0.184	220	24	0.0022026	=	2.13987

Plant Cumulative Increase: (tons/year)

POLLUTANT	Existing	New	Total
NO _x	0	0.050638	0.050638
CO	0	0.005415	0.005415
POC	0	0.002665	0.002665
PM ₁₀	0	0.001623	0.001623
SO ₂	0	0.002229	0.002229

Toxic Risk Screening:

The toxic emission of diesel particulate exceeds the District Risk Screening Trigger, as shown in Table (1) below, and a Risk Screening Analysis has been performed.

Table 1

Source	PM ₁₀ Emission Factor (g/bHP-hr)	HP	Annual Usage (Hours/year)	Diesel Exhaust Particulate Emissions (lb/year)	Trigger Level (lb/yr)	Risk Screen Required? (Yes/No)
1	0.134	220	50	3.249559083	0.64	Yes

Results from the health risk screening analysis show that for 50 hours of operation per year when, excluding periods when operation is required due to emergency conditions, the maximum cancer risk is 2.0 in a million when the analysis was performed at a PM₁₀ emission 3.250 lb/year. Thus, in accordance with the District's Toxic Risk Management Policy, the screen passes.

The ISCST3 air dispersion computer model was used to estimate annual average ambient air concentrations. Stack and building parameters for the analysis were based on information provided by the applicant. Estimates of residential risk assume continuous 70-year exposure to annual average TAC concentrations.

STATEMENT OF COMPLIANCE

S-1 will be operated as emergency standby engines and therefore are not subject to the emission rate limits in Regulation 9, Rule 8 ("NO_x and CO from Stationary Internal Combustion Engines"). S-1 is subject to the monitoring and record keeping requirements of Regulation 9-8-530 and the SO₂ limitations of 9-1-301 (ground-level concentration) and 9-1-304 (0.5% by weight in fuel). Regulation 9-8-530 requirements are incorporated into the proposed permit conditions. Compliance with Regulation 9-1 is expected since diesel fuel with a 0.05% by weight sulfur is mandated for use in California. Like all sources, S-1 is subject to Regulation 6 ("Particulate and Visible Emissions"). These engines are not expected to produce visible emissions or fallout in violation of this regulation and they will be assumed to be in compliance with Regulation 6 pending a regular inspection.

This diesel engine is subject to the Stationary Diesel Engine Air Toxics Control Measure (ATCM) and is considered a new stationary emergency standby diesel engine since it will be installed after January 1, 2005 and is larger than 50 HP. The requirements of the ATCM will be included in the permit conditions.

This application is considered to be ministerial under the District's proposed CEQA guidelines (Regulation 2-1-312) and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 2.3.

The project is within 1000 feet from the nearest school and therefore subject to the public notification requirements of Reg. 2-1-412.

Best Available Control Technology:

In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NO_x, CO, SO₂ or PM₁₀.

Based on the emission calculations above, the owner/operator of S-1 is subject to BACT for the following pollutants: NO_x and CO. BACT 1 levels do not apply for 'engines used exclusively for emergency use during involuntary loss of power' as per Reference b, Document 96.1.2 of the BAAQMD BACT Guidelines for IC Engines. Hence, the owner/operator has to meet BACT 2 limits presented below.

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice 3. TBACT	TYPICAL TECHNOLOGY
NO _x	1. 1.5 g/bhp-hr [107 ppmvd @ 15% O ₂] <i>a,b</i> 2. 6.9 g/bhp-hr [490 ppmvd @ 15% O ₂] <i>a,b,c</i> 3. 6.9 g/bhp-hr [490 ppmvd @ 15% O ₂] <i>2</i>	1. Selective Catalytic Reduction (SCR) + Timing Retard + Turbocharger w/ Intercooler <i>a,b</i> 2. Timing Retard $\leq 4^\circ$ + Turbocharger w/ Intercooler <i>a,b,c</i> 3. Timing Retard $\leq 4^\circ$ + Turbocharger w/ Intercooler
CO	1. n/s 2. 2.75 g/bhp-hr [319 ppmvd @ 15% O ₂] <i>b,c</i>	1. Catalytic Oxidation <i>b</i> 2. CARB or EPA (or equivalent) low-CO emitting certified engine <i>b,c</i>

For NO_x, and CO, the emission limits set by BACT 2 are met, as shown in Table (2) below.

Table (2)

Pollutant	Engine Emission Factors with Catalyst (g/hp-hr)	Emission Factor Limits as set by BACT 2 (g/hp-hr)	Have the limits been met?
NO _x	4.18	6.9	YES
CO	0.447	2.75	YES

Therefore, S-1 is determined to be in compliance with the BACT 2 limits for NO_x and CO.

Since CARB certification data was used to establish the NO_x and CO emission factors, the BACT 2 emission limits have not been incorporated into the permit conditions and are assumed to be complied with through the design standards demonstrated by the CARB certification testing.

Offsets: Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC or NO_x. Based on the emission calculations above, offsets are not required for this application.

PSD, NSPS, and NESHAPS do not apply.

PERMIT CONDITIONS

Application 012728; THE HOME DEPOT #6964; Plant 17033; Conditions for S-1 Emergency Diesel Generator Set:

PC #22352

1. Hours of Operation: The owner/operator shall operate the emergency standby engine(s) only to mitigate emergency conditions or for reliability-related activities. Operating while mitigating emergency conditions is unlimited. Operating for reliability-related activities is limited to 50 hours per any calendar year. [Basis: ATCM]

“Emergency Conditions” is defined as any of the following:

- a. Loss of regular natural gas supply.
- b. Failure of regular electric power supply.
- c. Flood mitigation.
- d. Sewage overflow mitigation.
- e. Fire.
- f. Failure of a primary motor, but only for such time as needed to repair or replace the primary motor. [Basis: Regulation 9-8-231]

“Reliability-related activities” is defined as any of the following:

- a. Operation of an emergency standby engine to test its ability to perform for an emergency use, or
- b. Operation of an emergency standby engine during maintenance of a primary motor. [Basis: Regulation 9-8-232]

2. The owner/operator shall equip the emergency standby engine(s) with either:
 - a. a non-resettable totalizing meter that measures the hours of operation for the engine; or
 - b. a non-resettable fuel usage meter, the maximum hourly fuel rate shall be used to convert fuel usage to hours of operation. [Basis: Regulation 9-8-530]
3. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 2 years and shall make the log available for District inspection upon request:
 - a. Hours of operation (total).
 - b. Hours of operation (emergency).
 - c. For each emergency, the nature of the emergency condition.
 - d. Fuel usage for engine(s) if a non-resettable fuel usage meter is utilized. [Basis: Regulations 9-8-530 and 1-441]

RECOMMENDATION

Issue an Authority to Construct to THE HOME DEPOT #6964 for the following source:

S-1 Emergency Standby Generator Set: Diesel Engine; Make: John Deere; Model: 6068HF275L; Rated Horsepower: 220 HP

EXEMPTIONS

None.

By: _____ Date: _____
Myoung William Chung
Air Quality Engineering Intern